JEFFERSON COLLEGE

COURSE SYLLABUS

MTH134H

HONORS COLLEGE ALGEBRA

3 Credit Hours

Prepared by:
Constance Kuchar
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Revised date:
January 2013

Revised by:
Constance Kuchar
January 2015

Ms. Shirley Davenport, Dean, Arts & Science Education
Ms. Linda Abernathy, Division Chair, Math, Science, and Business
MTH134H   Honors College Algebra

I.  CATALOG DESCRIPTION

   A.  Course pre-requisites/co-requisites: Honors Program admission and COMPASS Algebra score of at least 66, College Algebra score of at least 31 within the past two years, ACT math score of 22 or higher within the past two years, or MTH128 with a grade of “C” or better, or MTH110 with a grade of “C” or better, and reading proficiency

   B.  3 semester credit hours

   C.  Honors College Algebra consists of several non-sequential algebraic topics. The student will actively explore these topics within the realms of both the real number system and the complex number system through discussion and presentations. This course will meet the requirement for the Associate of Arts Degree. Students may only apply one of MTH134H, MTH134, or MTH141 toward graduation. A graphing calculator is required; calculators with computer algebra systems are prohibited. (D)

II.  EXPECTED LEARNING OUTCOMES/CORRESPONDING ASSESSMENT MEASURES

   Note: each of the following learning outcomes will be measured on at least one in-class exam, but instructors are encouraged to assess them with additional measures including homework, quizzes, and/or projects

<table>
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<tr>
<th>Expected Learning Outcomes</th>
<th>Assessment Measures</th>
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<tr>
<td>Graph with and without a calculator and will recognize and use transformations in graphing. Students will further be able to determine intercepts and relative extreme using the calculator</td>
<td>Class discussion/practice, homework, quizzes/tests, and project</td>
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<tr>
<td>Appropriately apply algebraic techniques to solve linear, rational, quadratic, quadratic type and radical equations and related applications. Students will also be able to solve and verify solutions to equations graphically using the calculator</td>
<td>Class discussion/practice, homework, quizzes/tests, and project</td>
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<tr>
<td>Appropriately apply distance, midpoint, and circle formulas, and will be able to determine the equation of a circle given information about it</td>
<td>Class discussion/practice, homework, and quizzes/tests</td>
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<tr>
<td>Identify, describe, evaluate, and analyze functions, and will use functions to solve application problems</td>
<td>Class discussion/practice, homework, quizzes/tests, and project</td>
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Use a calculator to determine the most appropriate regression equation to model given data and will use the model to make predictions

Class discussion/practice, homework quizzes/tests, and project

Analyze exponential and logarithmic functions and will apply them appropriately

Class discussion/practice, homework quizzes/tests, and project

Solve linear systems of equations by applying various algebraic methods and will use systems to solve application problems

Class discussion/practice, homework quizzes/tests, and project

Analyze matrices and their properties and apply them to systems of equations, using the calculator to obtain a reduced row-echelon matrix

Class discussion/practice, homework, and quizzes/tests

III. OUTLINE OF TOPICS

A. Graphs, Functions, and Models
   1. Introduction to graphing
   2. Functions and graphs
   3. Linear functions, slope, and applications
   4. Equations of lines and modeling
   5. Linear equations, functions, zeros, and applications
   6. Solving linear inequalities

B. More on Functions
   1. Increasing, decreasing, and piecewise, functions; applications
   2. The algebra of functions
   3. The composition of functions
   4. Symmetry and transformations
   5. Variation and applications (optional)

C. Quadratic Functions and Equations; Inequalities
   1. The complex numbers
   2. Quadratic equations, functions, zeros, and models
   3. Analyzing graphs of quadratic functions
   4. Solving rational equations and radical equations
   5. Solving equations and inequalities with absolute value

D. Polynomial and Rational Functions
   1. Polynomial functions and modeling
   2. Graphing polynomial functions
   3. Polynomial division; the remainder and factor theorems
   4. Theorems about zeros of polynomial functions
   5. Rational functions (optional)
   6. Polynomial inequalities
   7. Rational inequalities (optional)
E. Exponential and Logarithmic Functions
   1. Inverse functions
   2. Exponential functions and graphs
   3. Logarithmic functions and graphs
   4. Properties of logarithmic functions
   5. Solving exponential and logarithmic equations
   6. Applications and models: growth and decay; compound interest
   7. Systems of linear equations in two variables
   8. Systems of linear equations in three variables
   9. Systems of nonlinear equations in two variables

F. Systems of Equations and Matrices
   1. Systems of linear equations in two variables
   2. Systems of linear equations in three variables
   3. Matrices and systems of equations

IV. METHODS OF INSTRUCTION
   A. Lecture
   B. Discussion
   C. Student presentations
   D. MyMathLab interactive assignments

V. REQUIRED TEXTBOOK(S) WITH PUBLICATION INFORMATION


VI. REQUIRED MATERIALS

   Graphics calculator required (TI-83/84 recommended)

   Symbolic manipulating calculators prohibited.
VII. SUPPLEMENTAL REFERENCES

A. Student solutions manual (contained within MyMathLab)
B. Graphing calculator manual (contained within MyMathLab)
C. Study plan (contained within MyMathLab)

VIII. METHODS OF EVALUATION (basis for determining grade)

A. Homework 10-20%
B. Projects and presentations 10-20%
C. Quizzes 0-20%
D. Tests 30-60%
E. Comprehensive final examination 15-25%

F. Grading Scale
   90-100% = A
   80-89% = B
   70-79% = C
   60-69% = D
   Below 60% = F

IX. ADA AA STATEMENT

Any student requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (Library; phone 636-481-3169)

X. ACADEMIC HONESTY STATEMENT

Students who are caught cheating or plagiarizing material in this course will not receive credit for the assignment in question and may be dropped from the course with a failing grade. A detailed description of the Academic Honesty Policy statement can be found in the Jefferson College Student Handbook or online at: http://www.jeffco.edu.

XI. ATTENDANCE STATEMENT

Students earn their financial aid by regularly attending and actively participating in their coursework. If a student does not actively participate, he/she may have to return financial aid funds. Consult the College Catalog or a Student Financial Services representative for more details.